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ABSTRACT

At study was undertaken at California's College of the Canyons (CoC) to investigate the relationship between students' self assessments of skills on Computerized Assessment and Placement Programs forms and results from assessment tests in mathematics, reading, and writing. Data were collected on students who enrolled at the college in fall 1995 and spring 1996. The results of the students' assessments of their skills indicated that, on a scale of inadequate, adequate, good, and excellent, students ranked their listening, problem solving, speaking, writing, and reading skills as good, but their mathematical skills as adequate. In addition, students believed that between 2-3 to 4-5 hours of studying would be sufficient to receive a grade of "C" or higher. Results from the assessment tests indicated that students' received the highest scores for reading skills, the second highest for writing skills, and the lowest scores for mathematics skills. The results for all three tests indicated that students were generally successful at rating their own skills. Based on these findings, it was recommended that students continue to self-rate their learning and study skills, but that conclusive decisions on student placement should not be based solely on individuals' self-ratings. (AJL)

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An Analysis of Student Assessed Skills and Assessment Testing

August 1996

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A Matriculation Report
Prepared for
College of the Canyons

by
Dan Frise

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JC 970 014

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INTRODUCTION

New students, entering College of the Canyons, complete a Computerized Assessment and Placement Programs (CAPP) form and take a series of assessment tests. The CAPP form requires the following information from each prospective student:

Personal Data		
Name	Date of Birth	Sex
Social Security Number	Ethnic Background	Primary Language
Verifiable Learning Disability	Admission Status	Veteran Status

Educational Background		
High School Education Level	Highest Degree or Certificate	Time Length Out of School
Years of English Completed	Grade Received in Last English Class	High School Grade Point Average
Highest Level of Math Class	Grade Received in Last Math Class	Time Length Since Last Math Class

College Plans		
Times of Planned School Attendance	Number of Planned Units	Number of Planned Employment Hours
Most Important Educational Goal	Requested School Information	Declared Major and Definiteness of Choice
Transfer College	Importance of College to Closest People	Personal Importance of College

Of particular interest to this study is the last question, number 27. The following information is asked from this optional section:

Question 27 Additional Questions				
How would you rate your level of competence in each of the following learning and study skill areas? Mark the space on the CAPP form.				
Skill Area	Inadequate =1	Adequate =2	Good =3	Excellent=4
1. Memory skills				
2. Note taking skills				
3. Listening skills				
4. Speaking skills				
5. Writing skills				
6. Reading skills				
7. Mathematics skills				
8. Test taking skills				
9. Time management skills				
10. Problem solving skills				
11. Number of hours expected to study to receive a "C" or better.	1. One Hour	2. 2-3 hours	3. 4-5 hours	4. 6+ hours

The first part of this project provides a descriptive statistical analysis of the items in Question 27, which is based on the 1995 Fall and 1996 Spring semesters.

Besides filling out the CAPP form, students also take assessment tests in reading, writing, and math. The math test is broken down into four areas that include Algebra Readiness, Elementary Algebra, Intermediate Algebra, and Pre-calculus. The second part of this study investigates the accuracy scored on these assessment tests.

The third part of this research project compares student ratings contained in Question 27 of the CAPP form to the accuracy scored on corresponding assessment tests.

Statement of the Problem

This research project investigates the relationship between student assessment of skills as compared with assessment test results. From this topic, the following sub-questions are formulated:

1. How do students rate their scholastic abilities?
2. How do students perform on their assessment tests?
3. How do student ratings compare to corresponding assessment test scores?

Scope

The scope of this research project is limited to data of students enrolling at the College of the Canyons in the Fall, 1995 and Spring, 1996 semesters. The data used in this project was collected and provided by authorized college personnel. This project uses data from the math, reading, and writing assessment tests. Due to the small quantity of CELSA testing participants, this test is excluded from this study. Finally, no attempt was made to differentiate between the difficulty of the four different levels of math tests and the corresponding scores.

Limitations

This research project utilizes data without regard to its validity or reliability. Regarding the CAPP Question 27 data, no attempt is made to establish how students interpret the scoring criterion of "inadequate," "adequate," "good," or "excellent." Likewise, the assessment scores were not reviewed for their respective reliability and validity measurements.

Although this study will show a relationship between variables, note that it cannot be used to conclusively establish a direct cause and effect relationship.

RESEARCH METHODOLOGY

The following section details the methods of deriving statistical data from the student assessment of learning and study skills and the assessment tests.

Student Assessment of Learning and Study Skills

The statistical data from student assessment of learning and study skills is derived from the data provided by authorized College of the Canyons personnel. This data, transferred by diskette, reflects Fall, 1995 and Spring, 1996 assessments by students answering Question 27 on their CAPP form.

The data from the two semesters were merged into one file where descriptive statistics (mean, median, mode, percent, and count) was applied. This resulted in 2,781 data entries. Since the incomplete and inaccurate data was eliminated, the actual number of participants and the corresponding percentages are as follows:

Adjustment of Data for Self-Assessed Reporting of Study and Learning Skills

STUDY AND LEARNING SKILLS	NUMBER	PERCENTAGE
Memory	2106	0.76
Note-taking	2097	0.75
Listening	2091	0.75
Problem Solving	2074	0.75
Speaking	2090	0.75
Writing	2088	0.75
Reading	2081	0.75
Mathematics	2085	0.75
Test Taking	2086	0.75
Time Management	2077	0.75
Number of Weekly Study Hours	1946	0.70

This chart indicates that a range of 70 - 76% of the self-assessment data was utilized after eliminating unusable data.

Assessment Testing

The process for obtaining overall statistical values for assessment testing in reading, writing, and mathematics is derived from data supplied by a database maintained by personnel at the College of the Canyons. The data handling for each assessment test (reading, writing, and mathematics) were uniform.

First, incomplete or erroneous self-assessment data entries from the Fall, 1995 and the Spring, 1996 testing periods were eliminated. An example of the selected data appears below.

Sample of Self-Assessment Data Entries

Student Number	Memory	Note taking	Listening	Speaking	Writing	Reading	Math	Test Taking	# Hours
	Q27 1	Q27 2	Q27 3	Q27 4	Q27 5	Q27 6	Q27 7	Q27 8	Q27 11
1	3	3	4	4	3	4	4	4	2
2									
3	3	2	2	2	2	2		4	2
4	3	3	3	3	3	3	2	3	2
5	2	3	2	3	3	3	3	2	3
6	3	2	3	2	3	3	3	3	4

Second, data from assessment testing was analyzed. Descriptive statistics (mean, median, mode, count) was performed on each data entry in the "accurate" column within the corresponding assessment group. The results were tabulated and charted as illustrated below.

Sample of Assessment Test Data Entries

STUDENT NUMBER	READING DATE	READING CORRECT	READING PERCENT	READING ATTEMPT	READING ACCURATE
1	19950808	23	55	34	68
2	19950719	13	12	27	48
3	19950801	17	25	25	68

The "accurate" column displays the percentage correct. This numerical value is the result of dividing the "correct" value by the "attempt" value. Student 1, for example, had an accurate rating of 68% because 23/34 = 0.68. This "accurate" value was chosen so that all assessment test results (reading, math, writing, etc.) may be compared although their corresponding raw score ranges may differ.

Finally, self assessment scores were paired with the "accurate" scores from the assessment tests. Graphs and tables, illustrating the resulting data, show the relationship between these two factors.

FINDINGS

This research project contains two sets of findings, one from the student assessment of learning and study skills and the other from the assessment testing. The project then consolidates this data into one set of statistics for comparison purposes.

Student Assessment of Learning and Study Skills

Data from Question 27 of the CAPP Form establishes the self-rating of learning and study skills of students. The eleven categories of self assessment include memory skills, note taking skills, listening skills, speaking skills, writing skills, reading skills, mathematics skills, test taking skills, time management skills, problem solving skills, and number of weekly hours required to receive a "C" or better in a 3-unit class.

The tables below summarize the descriptive statistics obtained from the data.

Breakdown of the Eleven Categories of Self Assessment

Note-taking Skills					
	Response	N	%		
Excellent	4	137	6.53	Mean	2.573
Good	3	847	40.39	Median	3
Adequate	2	886	42.25	Mode	3
Inadequate	1	227	10.82		
Total		2097	100		

Listening Skills					
	Response	N	%		
Excellent	4	32	1.53	Mean	3.010
Good	3	418	19.99	Median	3
Adequate	2	1137	54.38	Mode	3
Inadequate	1	504	24.10		
Total		2091	100		

Problem Solving Skills					
	Response	N	%		
Excellent	4	95	4.58	Mean	2.818
Good	3	708	34.14	Median	3
Adequate	2	952	45.9	Mode	3
Inadequate	1	319	15.38		
Total		2074	100		

Speaking Skills					
	Response	N	%		
Excellent	4	112	5.36	Mean	2.813
Good	3	598	28.61	Median	3
Adequate	2	948	45.36	Mode	3
Inadequate	1	432	20.67		
Total		2090	100		

Writing Skills					
	Response	N	%		
Excellent	4	101	4.84	Mean	2.723
Good	3	656	31.90	Median	3
Adequate	2	1030	49.33	Mode	3
Inadequate	1	291	13.94		
Total		2088	100		

Reading Skills					
	Response	N	%		
Excellent	4	54	2.59	Mean	2.963
Good	3	505	24.27	Median	3
Adequate	2	985	47.33	Mode	3
Inadequate	1	537	25.80		
Total		2081	100		

Mathematical Skills					
	Response	N	%		
Excellent	4	355	17.03	Mean	2.340
Good	3	869	41.68	Median	2
Adequate	2	657	31.51	Mode	2
Inadequate	1	204	9.78		
Total	Response	2085	100		

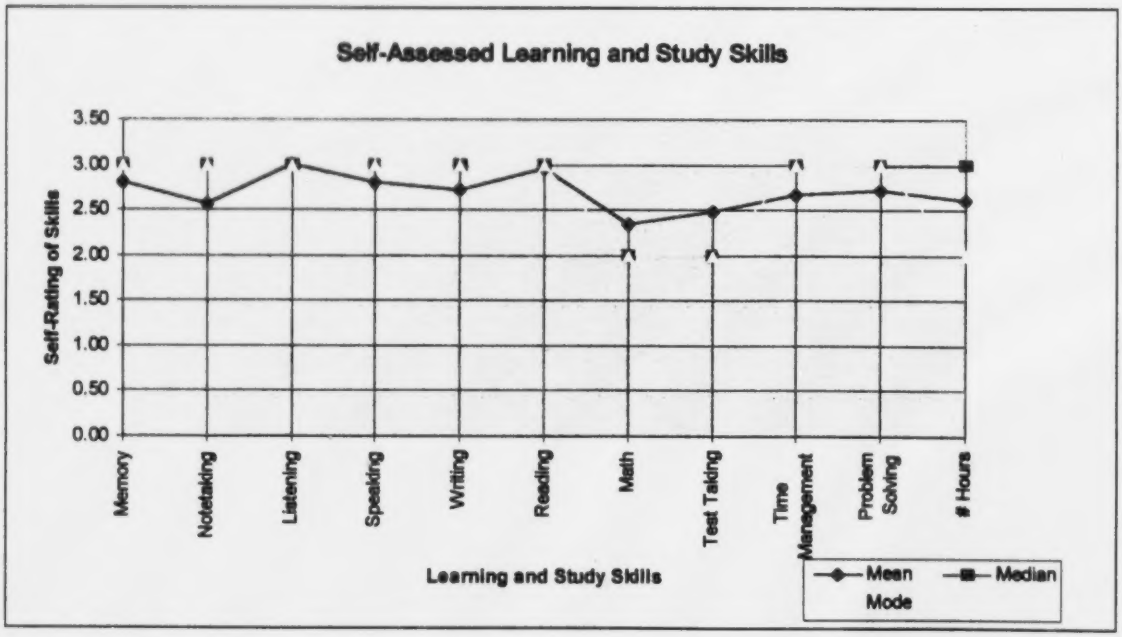
Test-Taking Skills					
	Response	N	%		
Excellent	4	142	6.81	Mean	2.493
Good	3	926	44.39	Median	3
Adequate	2	864	41.42	Mode	3
Inadequate	1	154	7.38		
Total		2086	100		

Time Management Skills					
	Response	N	%		
Excellent	4	126	6.07	Mean	2.680
Good	3	707	34.04	Median	3
Adequate	2	949	45.69	Mode	2
Inadequate	1	295	14.20		
Total		2077	100		

Number of Weekly Hours Required for a Three-Unit Class					
	Response	N	%		
1 Hour	4	113	5.81	Mean	2.622
2-3 Hours	3	840	43.17	Median	3
4-5 Hours	2	662	34.02	Mode	2
6+ Hours	1	331	17.01		
Total		1946	100		

The mean, median and mode values suggest that students would rank their listening, problem solving, speaking, writing, and reading skills as "good" and their mathematical skills as "adequate." However, the mean, median and mode rating of their time management, test taking, and note-taking skills varies between "adequate" and "good." Additionally, it is interesting that none of the overall scores enter the "inadequate" or "excellent" ranges.

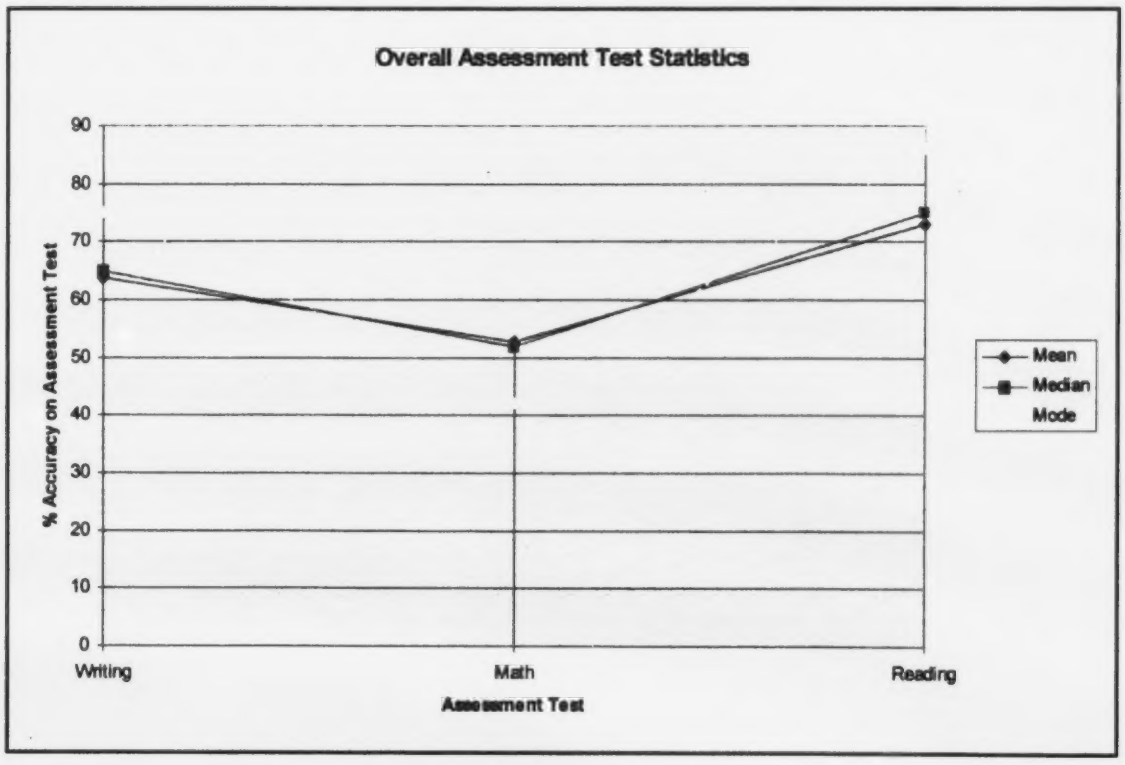
The number of hours per week required to earn a "C" in a three-unit class falls within the 2 to 3 and 4-5 hour mark. Below is a graphical representation of the self-assessment data.



Assessment Testing

Students who completed CAPP Forms during the Fall, 1995 and Spring, 1996 Semesters also took assessment tests in the subject areas of math, reading, and writing. Descriptive statistical analysis of these overall tests produced the following results.

These results indicate that reading skills gained the highest assessment rating, writing skills received the second highest assessment rating, and math skills obtained the lowest assessment rating. A graphical representation of this analysis appears below.

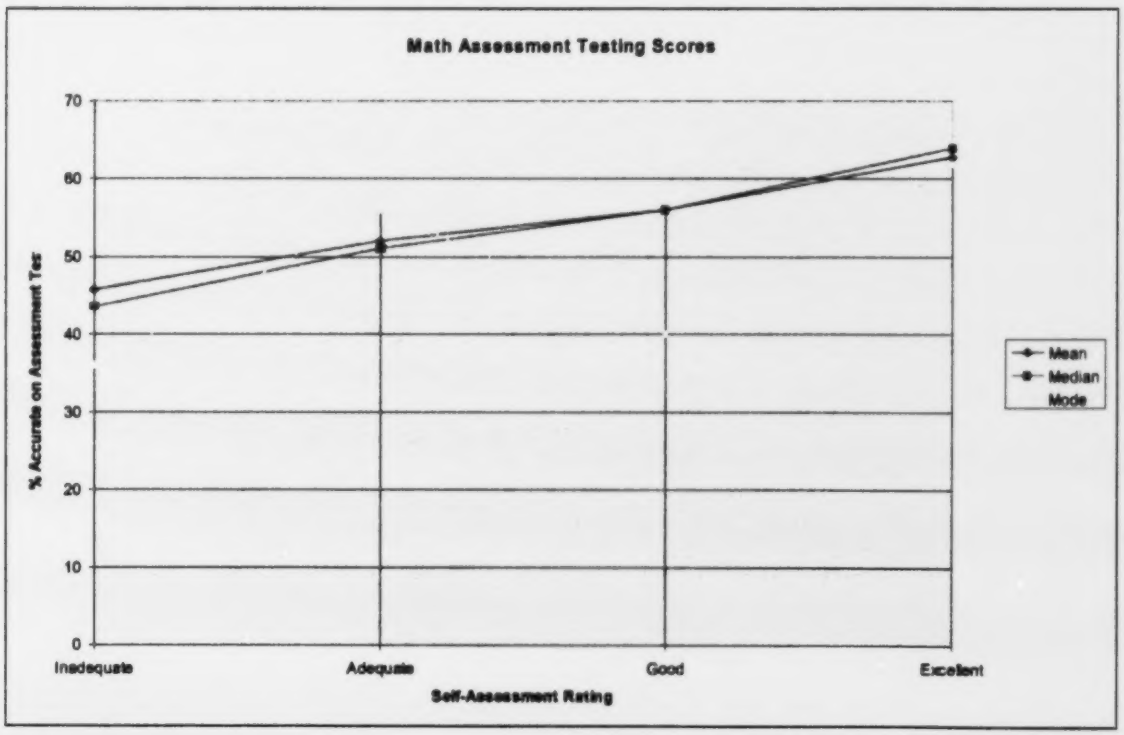


It is interesting how close the mean and median ratings are clustered together, while the mode is at either substantially higher or lower levels. This could suggest that, as an overall group, scores are statistically similar, but this would not apply if taken on an individual basis.

Combination of Self-Evaluation and Assessment Testing Results

The final phase of this research project concerns itself with combining the self-evaluation of study and learning skills with the results of the mathematics, reading, and writing assessment tests. This phase is broken down into its three corresponding parts.

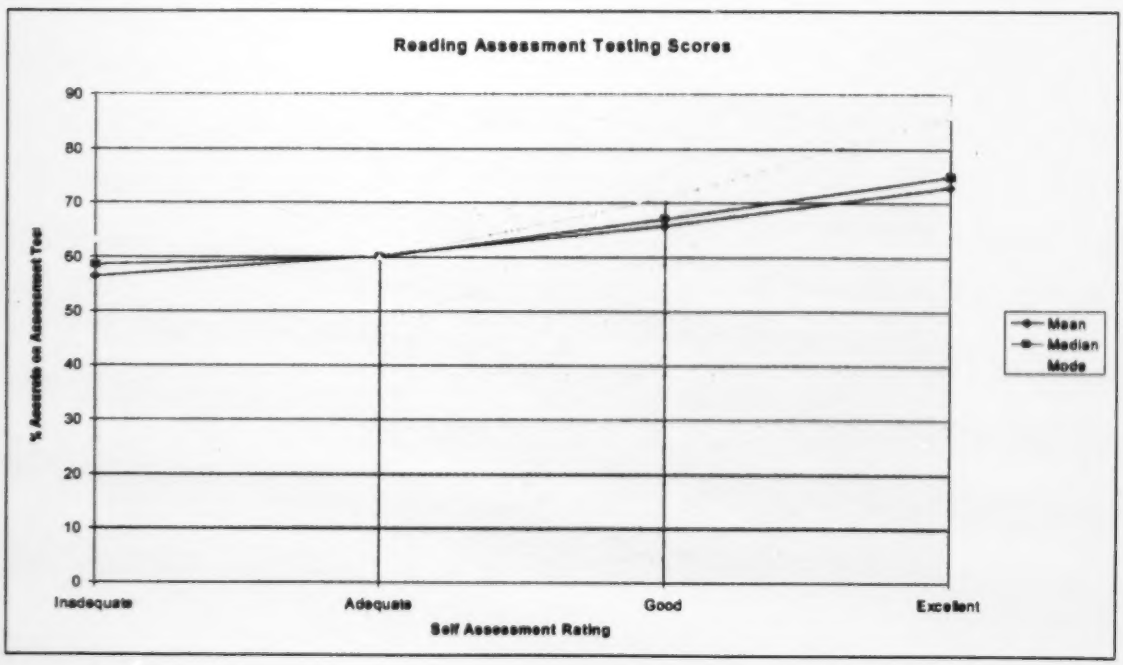
Mathematics assessment testing and self-evaluation of skills reveal the statistical indicators illustrated in the following graph and table.



Math Assessment and Evaluation Results				
	Inadequate	Adequate	Good	Excellent
Range	94	94	89	87
Min	0	2	9	13
Max	94	97	98	97
Mean	45.72	52	56	62.83
Median	43.5	51	56	64
Mode	36	56	40	62
Percent	0.17	0.43	0.31	0.09
Count	322	800	573	171

The mean and median values from the assessment test rise steadily from the "inadequate" range through the "excellent" range. The mode value fluctuates around these two values. These figures indicate that student self-evaluations are consistent with their assessment test scores.

Reading assessment testing and self-evaluation reveals the statistical indicators illustrated in the following graph and table.

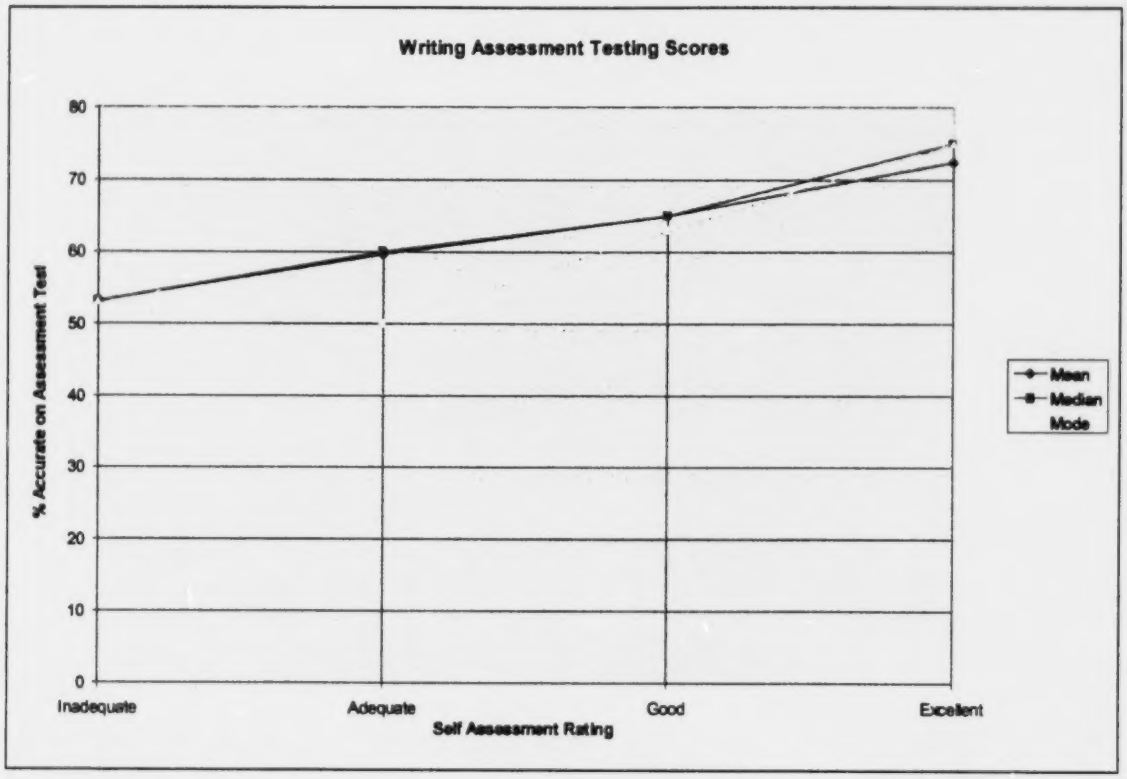


Reading Assessment and Evaluation Results				
	Inadequate	Adequate	Good	Excellent
Range	69	77	86	74
Min	20	20	11	23
Max	89	97	97	97
Mean	56.38	60.18	65.75	73
Median	58.5	60	67	75
Mode	63	60	71	86
Percent	0.025	0.25	0.47	0.26
Count	50	493	942	514

Again, the mean and median values are fairly consistent with each another, while the mode value fluctuates above the rest of the values. This is indicative of the trend that an overall value may be placed on a large group of test-takers, however, not on individual performances. The steady slope upward from "inadequate" to "excellent" demonstrates the accuracy of students' self-assessments.

Combining the **writing** assessment testing and evaluation of skills reveals the statistical indicators illustrated in the following graph and table.

Writing Assessment and Evaluation Results				
	Inadequate	Adequate	Good	Excellent
Range	65	96	90	67
Min	18	2	10	33
Max	83	98	100	100
Mean	53	59.5	65	72.4
Median	53	60	65	75
Mode	53	50	63	75
Percent	0.05	.32	0.49	0.14
Count	97	630	947	271



The statistical analysis in this table and graph indicates that assessment test accuracy again escalated with increased self-evaluation ratings. This time, the mode tended to be under the mean and median, indicating that individual scores will vary from the tendencies of the group.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the findings of this research project, the following conclusions are made:

1. Overall, students rate their memory, note taking, listening, speaking, writing, reading, mathematic, test taking, time management, and problem solving skills between "adequate" and "good." None of the group self-assessment ratings fell into the "inadequate" or "excellent" range.
2. Overall student performance on assessment tests varies with subject content. Assessment score results, from highest to lowest, are reading, writing, and mathematics. Statistical analysis shows that overall group scores are very similar, but individual scores may fluctuate widely.
3. Students' overall self-evaluation of learning and study skills correspond to their overall assessment test scores in math, reading, and writing. Those students who rated their skills as "inadequate" have lower assessment scores that those who rated themselves with higher skills.

Recommendations

Based on the conclusions of this research project, the following recommendations are presented:

1. Continue to have students self rate their learning and study skills as part as the admission process. For more reliable results, define the grading terms "inadequate," "adequate," "good," and "excellent" in terms that students can comprehend.
2. Continue to administer assessment tests to serve the educational needs of incoming students. This testing procedure can enable college personnel planning of the appropriate number of courses and sections to fit student needs. Similarly, assessment testing also provides valuable information to share with educational institutions (such as local high schools) who supply transferring students.
3. Students, who miss assessment testing, can give an overall and accurate self-assessment of their learning and study skill levels in the content areas of math, reading, and writing. However, conclusive decisions should not be based solely on an individual's self-rating, but on a combination of elements, including assessment testing instruments.